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ABSTRACT OF THE DISCLOSURE

An excimer laser system with a real time fluorine monitor and an automatic fluorine control system to permit precise control of the fluorine concentration within the laser chamber. Cleaned laser gas is extracted from the laser chamber and directed through an F₂ sample cell prior to returning to the chamber through one of the chamber window housings. A UV light beam is directed through the F₂ sample cell and the amount of absorption of the light is measured. In preferred embodiments the absorption is measured by detecting with a photo detector the amount of light which passes through the cell. The photo detector provides a feedback signal which is used by a laser controller to automatically control fluorine concentration in the chamber to within desired ranges. In another preferred embodiment an acoustic detector detects acoustic signals resulting from absorbed light pulses. This invention provides a substantially real time measurement of fluorine concentration.

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